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## (54) Improvements in or relating automatic raffle voucher dispensing apparatuses

(57) A game playing apparatus has a reader 20 for reading the code on a code carrier such as a key 40. Insertion of the key causes a raffle voucher to be issued by a printer 21, and the apparatus selects at the end of the cycle, randomly or pseudo-randomly, one of the raffle tickets issued during a raffle cycle. Preferably the winning number is displayed on a display 4 and a predetermined period indicated on a display 5 during which the key associated with the winning voucher must be re-inserted into the reader 20 in order to claim a prize, for which a voucher is then printed by the printer 21.

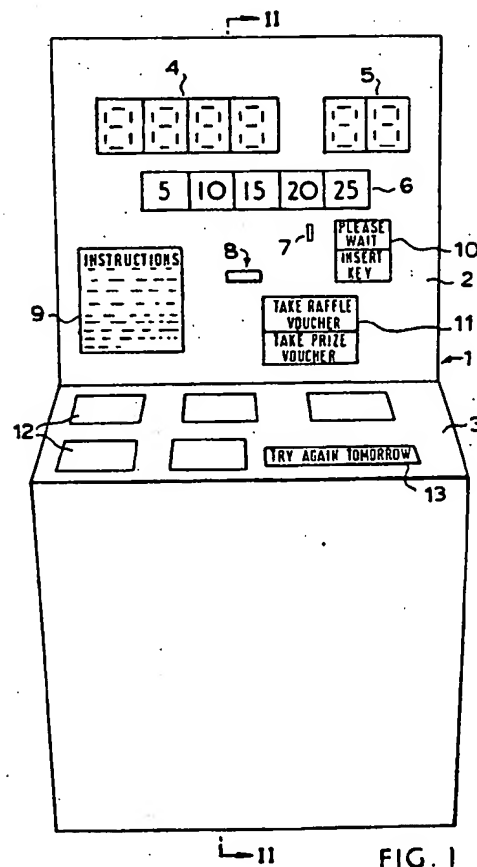


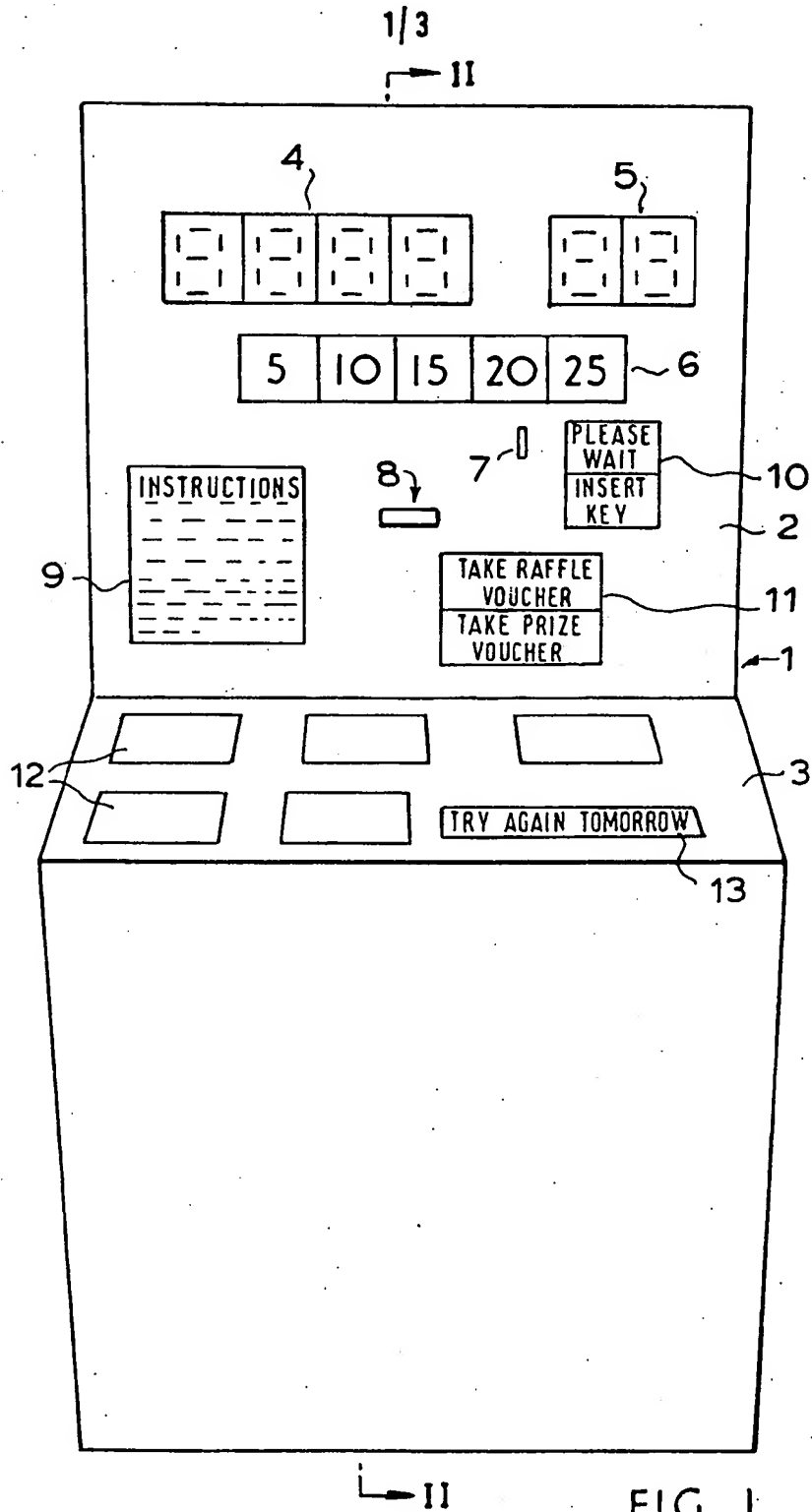
FIG. 1

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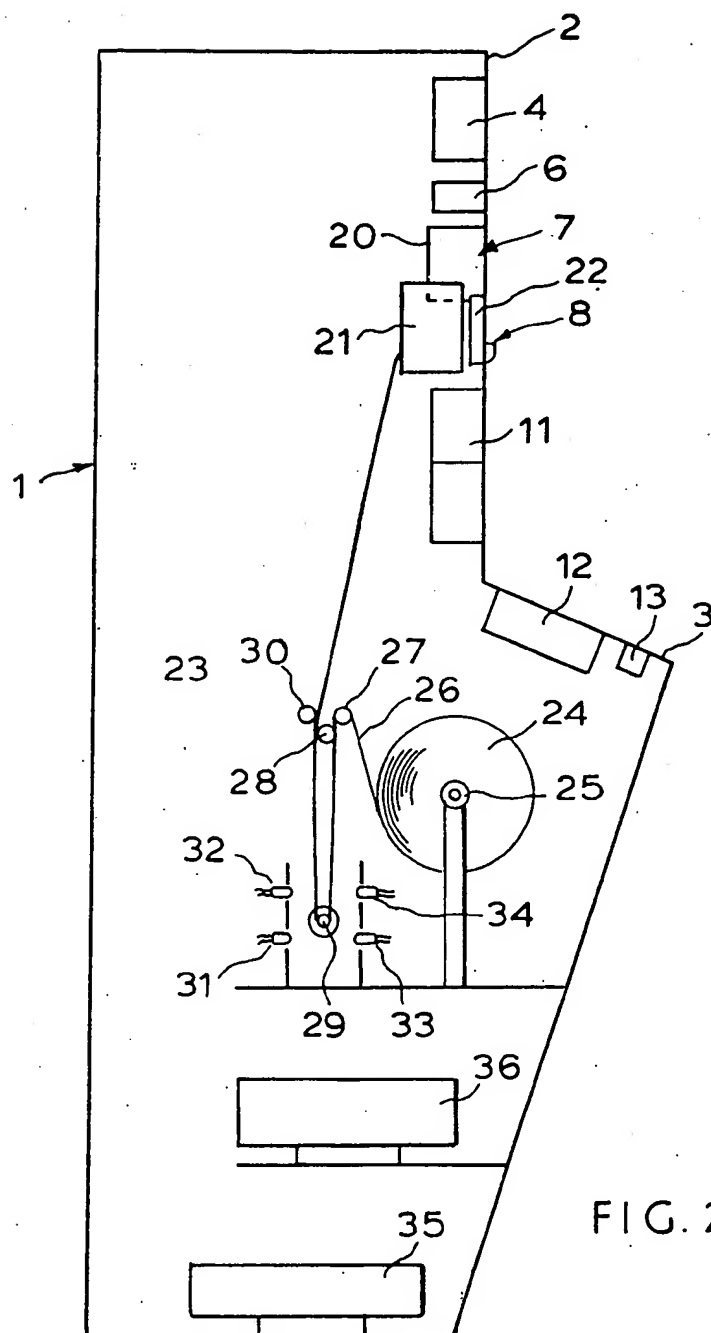
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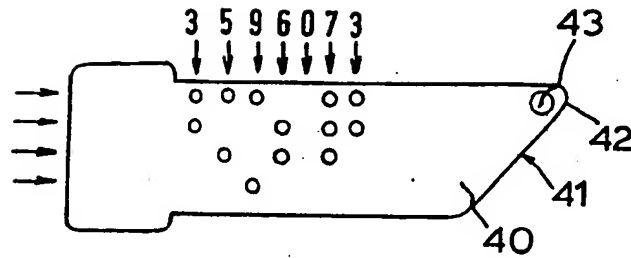


FIG. 3.

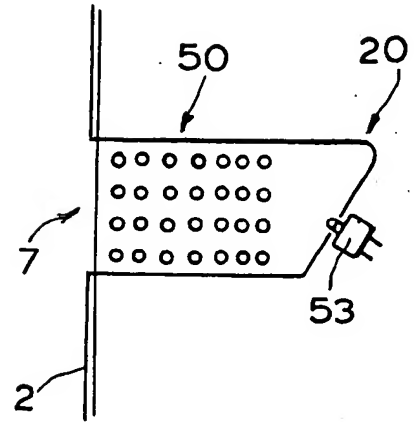


FIG. 4.

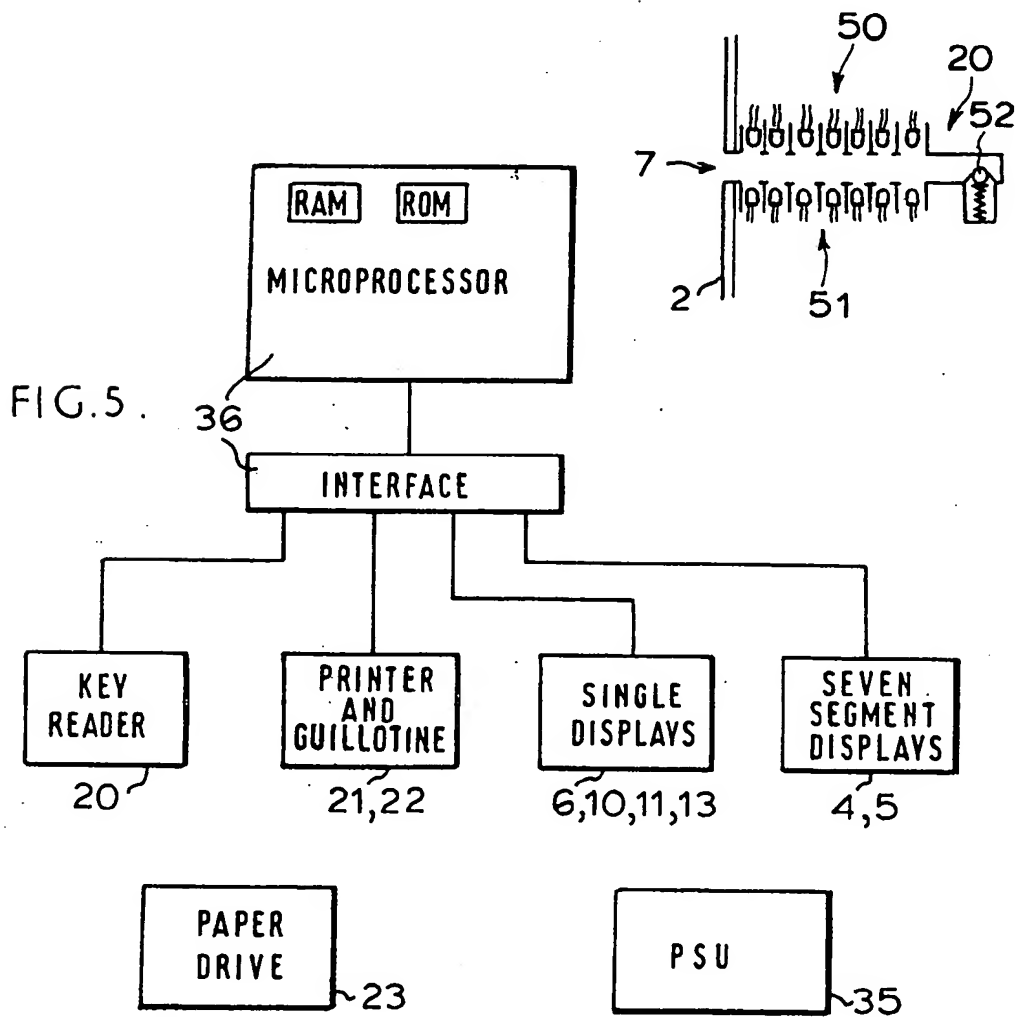


FIG. 5.

## SPECIFICATION

**Improvements in or relating to game playing apparatuses and automatic raffle voucher dispensing apparatuses**

The present invention relates to apparatuses for playing games, apparatuses for automatically dispensing raffle vouchers, and to combinations of such apparatuses. Such apparatuses may be provided in amusement areas, public houses, and the like.

According to one aspect of the invention, there is provided an apparatus for playing a game, comprising means for reading a code from a code carrier, means for comparing the read code with a predetermined winning code, and means for indicating a win when the read code and the predetermined code correspond.

When such an apparatus is provided in a public house or the like, the customers are provided with code carriers with no two such carriers having the same code. When entering the public house or the like, the customer presents the code carrier to the apparatus and, if the code read by the apparatus corresponds to the predetermined winning code, a win is indicated and a prize awarded to the customer.

The codes are preferably numbers and each code carrier is preferably an opaque member defining a plurality of locations, at least some of which are perforated, whereby the presence or absence of a perforation at each location defines a binary or binary coded decimal digit of first or second type, respectively. The reading means is preferably an array of light sources and an array of photo sensitive transducers defining therebetween an insertion passage for the code carrier, each transducer co-operating with a respective source to determine the presence or absence of a perforation at a respective location of the code carrier when inserted in the passage. The code carrier may, for instance, be generally flat and have the profile or outline of a key.

The predetermined code may be changed at predetermined intervals and would normally be changed after a win had been indicated. There may be a plurality of predetermined codes, the comparing means may be arranged to compare the read code with each predetermined code, and the indicating means may be arranged to indicate a win when the read code and any of the predetermined codes correspond. The indicating means is preferably arranged to indicate a respective prize corresponding to each predetermined code.

According to a second aspect of the invention, there is provided an automatic raffle voucher dispensing apparatus, comprising means for issuing a voucher in response to presentation of a token during a raffle cycle, and first means for randomly or pseudo-randomly selecting one of the vouchers issued

during the cycle at the end of the cycle.

Such apparatus may be located in a public house or the like and provides a fully automated raffle facility. This apparatus is preferably combined with apparatus according to the first aspect of the invention, so that presentation of the code carrier is also presentation of the token, in effect providing a combined "lucky dip" and raffle system.

There may be provided second means for randomly or pseudo-randomly selecting one of a plurality of predetermined prizes before the end of the cycle to be awarded to the selected voucher. For instance, the prizes may comprise various different sums of money and the second selecting means chooses one of these to be the prize of the raffle. In a preferred embodiment, an illuminated display of the various prizes available is provided and the second means illuminates these cyclically, resting on the one which is chosen. This adds interest and excitement to the raffle.

Preferably there is provided means for associating each presented token with the issued voucher and for preventing further issue of a voucher in response to further presentation of the token during the cycle. This prevents repeated issue of vouchers for any token. Preferably there is provided means, actuated by selection by the first selecting means, for supplying a prize voucher upon representation of the token associated with the voucher selected by the first selecting means. This provides an elegant way of vetting prize claims. Preferably the supplying means is arranged to supply the prize voucher only upon representation of the associated token during a predetermined period after selection by the first selecting means. There is preferably provided means for indicating the time lapsed or the time remaining during the predetermined period. This also adds an element of interest and excitement to the raffle draw, since a prize is only issued if the associated token is represented sufficiently rapidly.

Preferably there is provided a first memory containing a number defining the time of the end of each cycle and a second memory containing a table of incremental values arranged to be applied in sequence at the ends of the cycles to the number in the first memory for altering the time of the end of each cycle in an apparently random way. For instance, when the apparatus is disposed in a public house or the like, each cycle should preferably be completed within the particular period during which the public house is open, e.g. between 11 a.m. and 3 p.m. or between 6 p.m. and 11 p.m. In order to add interest and variety to the game, it is preferable for the cycle to finish at different times towards the end of each session of "opening hours". The number stored in the first memory, which may be a non-volatile random access memory, represents the actual time of the end of the current

cycle and this is varied by adding an "increment" chosen in sequence, at the beginning or end of each cycle, from a table of values stored in the second memory, which is preferably a read only memory. For instance, the least significant digits of the number in the first memory may each be incremented, without carrying, by adding the value in a corresponding cell of a first row of the table after a first cycle, then the corresponding cell in a second row of the table after the second cycle, and so on. Thus, the time of the end of each cycle varies in an apparently random and unpredictable manner but, by varying only the least significant digits of the number in the first memory, it is ensured that the raffle draw takes place towards the end of the session of opening hours so as to permit the maximum participation in the raffle and so as to entice customers to remain in the public house or the like for a longer period.

According to a third aspect of the invention, there is provided an apparatus for playing a game, comprising means for receiving a code carrier, means for determining the number of different code carriers which have been read during a game cycle, means for providing a winning number *i*, and means for indicating a win when the *i*th different code carrier is inserted during the game cycle.

The invention will be further described, by way of example, with reference to the accompanying drawings, in which:

FIGURE 1 is a front view of an apparatus constituting a preferred embodiment of the present invention;

FIGURE 2 is a cross section taken on the line II-II in FIGURE 1;

FIGURE 3 illustrates a code carrier or key for use with the apparatus of FIGURE 1;

FIGURE 4 shows lateral and vertical sectional views of a key reader of the apparatus of FIGURE 1; and

FIGURE 5 is a block circuit diagram of the apparatus of FIGURE 1.

The apparatus shown in FIGURE 1 comprises a housing 1 in the shape of a large free-standing console for location in a public house or the like. The apparatus includes a main vertical front panel 2 and an inclined or sloping front panel 3. The front panel 2 carries a four digit 7-segment display 4 and a two digit 7-segment display 5. Below these 7-segment displays is located a 5-element display 6 comprising five panels carrying the legends shown in the drawing and arranged for back illumination by respective lamps. Below the display 6 is a key insertion slot 7, a voucher printer outlet slot 8, printed and possibly back-lit instructions 9 for using the apparatus, and a pair of 2-element displays 10 and 11 having the printed legends shown in FIGURE 1 and arranged for back illumination by respective lamps.

The sloping panel 3 carries five back-illumi-

nated panels 12 illustrating the prizes available in the "lucky dip" game to be described hereinafter, and a back-illuminated single lamp display 13 carrying the legend shown.

FIGURE 2 is a cross-sectional view showing the interior of the apparatus 1. A key reader 20 is located behind the key slot 7 and will be described in more detail hereinafter. A printer 21, for instance of the type used with microcomputers, and a electrically operated guillotine 22 are located behind the slot 8. The guillotine is fixed to the front panel 2 whereas the printer 21 is hinged to the front panel by means of a hinge having a vertical axis.

In order to supply paper to the printer 21, a paper drive 23 is provided in the apparatus. Paper is stored in the apparatus in the form of a large roll 24 which is rotated by a motor 25 in order to unwind the paper 26. The paper from the roll passes over a fixed guide 27 and between the guide 27 and fixed guide 28. The paper forms a loop which is weighted by means of a free-hanging rotary weight 29, the other end of the loop passing between the guide 28 and a fixed guide 30 and thence to the printer 21.

The motor 25 is controlled by an arrangement comprising light sources 31 and 32, such as light emitting diodes, and light sensitive elements 33 and 34, such as photo-transistors. The loop of paper supporting the weight 29 passes between the light sources and the sensors so that the paper interrupts the light beam from the sources 31 and 32 to the sensors 33 and 34, respectively, when disposed therebetween. In order to control the supply of paper, with the weight and paper loop in the position shown in FIGURE 2, i.e. the light beam from the source 31 reaches the sensor 33 but the light beam from the source 32 is prevented from reaching the sensor 34 by the paper loop, the paper drive is in a "quiescent" state.

As the printer 21 prints and draws in paper, the lower level of the paper loop defined by the weight 29 rises and, when it permits the light beam from the source 32 to reach the sensor 34, the motor 25 is driven so as to supply paper from the roll 24 until the loop has reached a length sufficient to cut off the light beams to both the sensors 33 and 34. The motor is then stopped, and this process repeated so as to maintain a supply of paper for the printer, which would be unable to take the paper directly from the roll 24 as the motor which it contains is not sufficiently powerful.

As shown in FIGURE 2, the apparatus further comprises a power supply unit 35 and electronics 36 in the form of a microprocessor system including various interface circuits.

FIGURE 3 shows a code carrier or token for use with the apparatus of FIGURE 1. As shown in FIGURE 3, this element has an out-

line or profile similar to a key, and will therefore be referred to as a key hereinafter. The key 40 is made of an opaque plastics material and defines a plurality of locations arranged in rows and columns as indicated by the seven vertical arrows and the four horizontal arrows. At some of these locations, the key is perforated to provide a through aperture and, in the present embodiment, this represents a "one" in binary coded decimal. Alternatively, a binary representation could be adopted. The location therefore defines a seven digit decimal number which, in the case of the particular key shown in FIGURE 3, is "3596073". Thus, there are ten million possible codes or numbers and keys are provided such that no two keys carry the same number.

The key has a front or nose section defined by an inclined edge 41 and an apex portion 42. A through aperture 43 is formed in the apex portion 42 and locates the key in a key reader as described hereinafter.

FIGURE 4 shows two views of the key reader 20, the upper view showing a vertical cross section and the lower view showing a lateral cross section of the reader. The reader comprises an array of four by seven light sources 50, such as light emitting diodes, and a congruent array of light sensitive elements, such as photo-transistors 51. The arrays face each other to define therebetween a key insertion passage which extends from the key insertion slot 7 in the front panel 2. Each photo-transistor 51 is arranged to receive light only from the corresponding light source 50 via a portion of the key insertion passage corresponding to a respective location of the key 40. Thus, when there is an aperture at the respective location, the light beam is received by the respective photo-transistor whereas the absence of such an aperture prevents passage of the light. The reader is actuated only upon full insertion of the key therein, the position of full insertion being established by a spring-loaded captive ball-bearing 52 entering the aperture 43, in which condition the edge 41 of the key 40 actuates a microswitch 53 to enable reading of the code carried by the key.

FIGURE 5 is a block circuit diagram of the apparatus of FIGURE 1, with the reference numerals corresponding to those used in the other FIGURES. Thus, the circuit comprises a microprocessor and interface, to which are connected the key reader 20, the printer and guillotine 21 and 22, the various individual displays 6, 10, 11, and 13, and the two seven segment displays 4 and 5. FIGURE 5 also indicates diagrammatically the paper drive 23 and power supply unit 35, the paper drive 23 operating essentially independently of the microprocessor. The microprocessor includes random access memory RAM and read only memory ROM. The read only memory stores the operating program of the microprocessor, and hence of the apparatus, and operation of

the apparatus will be described hereinafter, from which a man skilled in the art would readily be able to perform the necessary programming.

When power is initially supplied to the apparatus 1, the microprocessor performs various initialising functions and illuminates the legend "insert key" of the display 10 when initialisation has been completed. A number representing the time or the end of a raffle cycle is stored in the random access memory within the microprocessor in a non-volatile manner, for instance by providing the random access memory with a back-up power supply. The microprocessor also contains a real time clock and date system which controls the raffle cycle time.

In this condition the other single-element displays are extinguished, as are the 7 segment displays 4 and 5.

When a customer inserts a key 40 carrying a unique code in the form of a seven digit decimal number, the legend "insert key" is extinguished and the legend "please wait" is illuminated. The microprocessor compares the seven digit decimal number with a previously stored seven digit number providing the winning combination and, if the two numbers do not correspond, illuminates the legend "try again tomorrow" on the display 13. If the numbers do correspond, then the apparatus provides a visual and/or audible indication of a win, illuminates the legend "take prize voucher" on the display 11, and provides a prize voucher through the slot 8, which is printed by the printer 21 and cut off from the paper roll by the guillotine 22. In the embodiment shown, there are five prizes and prize-winning combinations, the prizes being illustrated by the illuminated panels 12.

The legend "try again tomorrow" or "take prize voucher" is then extinguished, and the printer 21 prints a raffle voucher which is then separated by the guillotine 22 and supplied through the slot 8. The legend "take raffle voucher" is then illuminated. The raffle voucher is printed with a number which is stored in a look-up table in the random access memory of the microprocessor in association with the seven digit number carried by the key, and the microprocessor prevents the issue of further raffle vouchers upon re-insertion of the key into the reader 20 until completion of the raffle cycle by the apparatus, for instance towards the end of the session of opening hours of a public house in which the apparatus is installed.

Immediately before the end of the raffle cycle, the microprocessor enters a "raffle draw" mode by illuminating each of the prize legends shown on the display 6 in FIGURE 1, which represents the value in pounds of possible raffle prizes. Subsequent illumination of these prize values continues until the microprocessor makes a random or pseudo-random selection

of the prize to be awarded for that raffle cycle, at which time the respective prize legend is illuminated on the display 6 and the other legends remain extinguished. The microprocessor then selects randomly or pseudo-randomly one of the raffle voucher numbers which has been issued during the cycle as the winning number and displays this on the 7-segment display 4. Additional visual and/or audible indications are provided to indicate that the raffle draw has been made so as to alert customers to this fact. The microprocessor then commences timing of a period, such as two minutes, during which a prize claim may be made. In particular, the seven segment display 5 is incremented upwardly from zero to provide a display of the number of seconds which have elapsed since the commencement of the prize claim period. When the display reaches the value "60" corresponding to one minute from the raffle draw, the microprocessor then decrements the display 5 to show the number of seconds remaining of the period during which the prize may be claimed. The owner of the key which is associated with the winning raffle voucher must insert the key into the reader 20 during this period in order to claim a prize. When the key is inserted, the microprocessor checks that the seven digit code number corresponds to the number of the raffle voucher selected as the winning voucher and, if the correct key has been inserted, causes the printer 21 and guillotine 22 to print and issue a prize voucher via the slot 8. The legend "take prize voucher" of the display 11 is illuminated. The prize voucher may then be cashed or exchanged, for instance at the bar of the public house. This marks completion of the raffle cycle, and a new cycle may be commenced immediately thereafter or may be commenced at the beginning of the next session of opening hours.

The apparatus thus provides an automatic "lucky dip" and raffle draw arrangement which may be used, for instance in public houses, to entice customers into the public house and to entice them to remain until towards the end of the particular session of opening hours. Accordingly, this assists in improving the "takings" of the public house and adds to the enjoyment and entertainment of the customers.

#### 55 CLAIMS

1. An automatic raffle voucher dispensing apparatus, comprising means for issuing a voucher in response to presentation of a token during a raffle cycle, and first means for randomly or pseudo-randomly selecting one of the vouchers issued during the cycle at the end of the cycle.

2. An apparatus as claimed in claim 1, including second means for randomly or pseudo-randomly selecting one of a plurality

of predetermined prizes before the end of the cycle to be awarded to the selected voucher.

3. An apparatus as claimed in claim 1 or 2, including means for associating each presented token with the issued voucher and for preventing further issue of a voucher in response to further presentation of the token during the cycle.

4. An apparatus as claimed in claim 3, in which each token carries a code which is stored in a look-up table of the said means, which prevents further issue of a voucher when a token carrying a code previously stored in the look-up table is presented during the cycle.

5. An apparatus as claimed in claim 3 or 4, including means, actuated by selection by the first selecting means, for supplying a prize voucher upon representation of the token associated with the voucher selected by the first selecting means.

6. An apparatus as claimed in claim 5, in which the supplying means is arranged to supply the prize voucher only upon representation of the associated token during a predetermined period after selection by the first selecting means.

7. An apparatus as claimed in claim 6, including means for indicating the time lapsed or the time remaining during the predetermined period.

8. An apparatus as claimed in any one of claims 1 to 7, including a first memory containing a number defining the time of the end of each cycle, and a second memory containing a table of incremental values arranged to be applied in sequence at the ends of the cycles to the number in the first memory for altering the time of the end of each cycle in an apparently random way.

9. An apparatus as claimed in any one of claims 1 to 8, in which there is provided printing means for printing the vouchers, the printing means comprising a printer and a paper feed mechanism, the paper feed mechanism comprising means for defining a looped paper path, a rotary weight for defining a lower turning point of the paper loop, and a motor-driven paper store arranged to supply paper to the looped paper path so as to maintain the weighted turning point between upper and lower predetermined positions, the printer including means for drawing in paper from the looped paper path.

10. An apparatus for playing a game, comprising means for reading a code from a code carrier, means for comparing the read code with a predetermined winning code, and means for indicating a win when the read code and the predetermined code correspond.

11. An apparatus as claimed in claim 10, in which the codes are numbers.

12. An apparatus as claimed in claim 11, in which the code carrier is an opaque member defining a plurality of locations, at least some



of which are perforated, whereby the presence or absence of a perforation at each location defines a binary or binary coded decimal digit of first or second type, respectively.

- 5 13. An apparatus as claimed in claim 12, in which the reading means comprises an array of light sources and an array of photosensitive transducers defining therebetween an insertion passage for the code carrier, each transducer  
10 cooperating with a respective source to determine the presence or absence of a perforation at a respective location of the code carrier when inserted in the passage.

14. An apparatus as claimed in any one of  
15 claims 10 to 13, in which the predetermined code is changed at predetermined intervals.

15. An apparatus as claimed in any one of  
20 claims 10 to 14, in which the predetermined code is changed after a win has been indicated.

16. An apparatus as claimed in any one of  
claims 10 to 15, in which there are a plurality of predetermined codes, the comparing means is arranged to compare the read code with  
25 each predetermined code, and the indicating means is arranged to indicate a win when the read code and any of the predetermined codes correspond.

17. An apparatus as claimed in claim 16, in  
30 which the indicating means is arranged to indicate a respective prize corresponding to each predetermined code.

18. A combination of an apparatus as  
claimed in any one of claims 1 to 9 and an  
35 apparatus as claimed in any one of claims 10 to 17, in which the code carrier is the token.

19. An apparatus substantially as hereinbefore described with reference to and as illustrated in the accompanying drawings.

- 40 20. An apparatus for playing a game, comprising means for receiving a code carrier, means for determining the number of different code carriers which have been read during a game cycle, means for providing a winning  
45 number  $i$ , and means for indicating a win when the  $i$ th different code carrier is inserted during the game cycle.

#### CLAIMS

- 50 Amendments to the claims have been filed, and have the following effect:-

Claims 10-20 above have been deleted or textually amended.

- 55 New or textually amended claims have been filed as follows:-

10. An apparatus as claimed in any one of the preceding claims in which the token is a code carrier carrying a coded number.

- 60 11. An apparatus as claimed in claim 10, in which the code carrier is an opaque member defining a plurality of locations, at least some of which are perforated, whereby the presence or absence of a perforation at each location defines a bit of a binary number or a binary  
65 coded decimal digit.

12. An apparatus as claimed in claim 11, in which the reading means comprises an array of light sources and an array of photosensitive transducers defining therebetween an insertion  
70 passage for the code carrier, each transducer cooperating with a respective source to determine the presence or absence of a perforation at a respective location of the code carrier when inserted in the passage.

- 75 13. An apparatus as claimed in any one of the preceding claims, further comprising means for determining the number of different tokens which have been presented during the cycle, means for providing a winning number  
80  $i$ , and means for indicating a win when the  $i$ th different token is inserted during the cycle.

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